Fact Sheet

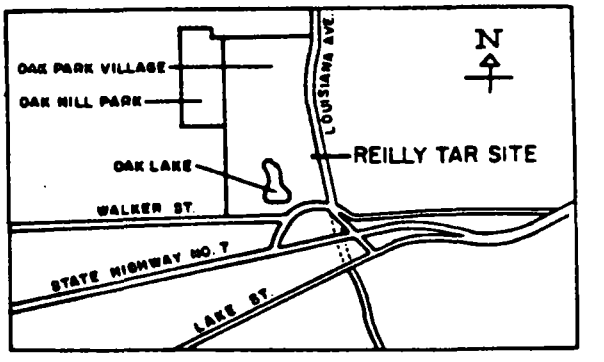
THE REILLY TAR AND CHEMICAL CO. SITE, IN BRIEF

DATE

How did it all begin?

Between 1918 and 1972, Republic Creosote, a subsidiary of Reilly Tar and Chemical Company, operated a coal-tar distillation and wood preserving plant on an 80-acre site in St. Louis Park. The site is north of Highway 7 and west of Louisiana Avenue. Oak Park Village is located on the northern portion of the site.

Wastes from the distillation process and any spills or leaks were disposed of in a series of ditches emptying into the swampy area south of the site. Coal-tar compounds heavily contaminated the soil, water and wells on the site -- the result of more than 50 years of dumping, leaks and spills.



As people learned more about hazardous chemicals, concern developed about possible water contamination from the Reilly operation. The Minnesota Department of Health examined the site and analyzed water from nearby wells in 1974, finding some wells contaminated with phenolic compounds. Soil borings revealed heavy contamination at depths of approximately 45 feet below the site.

In 1978, using a new technique, high-performance liquid chromatography, the Minnesota Department of Health was able to detect levels of contamination in four of St. Louis Park's municipal wells in the parts-per-trillion range. The four wells were shut down. Since then, two more St. Louis Park wells and one Hopkins municipal well have been taken out of operation due to contamination.

Are we drinking bad water now?

No. No water has been pumped from those wells since they were shut down, except for a few hours during the summer of 1982 when water pressure in St. Louis Park fell so low that the fire department would have had difficulty fighting a fire. The municipal water in St. Louis Park and Hopkins is safe to drink, and it is tested frequently to be sure it stays that way.

The Minnesota Department of Health has rated Hopkins' and St. Louis Park's water systems, giving them each 97.5 out of a possible 98 points. The ratings, based on water quality and maintenance and operation of the systems, place the cities in the upper one to two percent of Minnesota water systems monitored by the Health Department.

How are the chemicals harmful?

The contaminants of concern are polynuclear aromatic hydrocarbons (PAHs). Because the molecules have more than one nucleus, or center, they are "poly-nuclear." "Aromatic" refers to their six-sided structure, and "hydrocarbons" means that the molecules are made of just hydrogen and carbon. Some "heterocyclic" compounds have also been found, in which nitrogen, oxygen or sulfur replace some of the carbon.

The amount of PAHs in the water of contaminated wells is very small and cannot be seen or tasted. Nor would you get sick at once if you drank the water. But many scientists believe that the chemicals cause cancer in people, as they do in laboratory animals. Because it is thought to be harmful to drink the water every day for a long period of time, the contaminated wells have been shut down.

If the water we're getting is okay, what's the problem?

The trouble is that although the water is safe to drink, in the summer there is not enough to go around -- for gardens, grass and people. And the source of the contamination is still there under the old Reilly site. The contamination can continue to spread to wells that are now clean if something is not done to prevent it.

What's been done?

In recent years, many studies have been completed, and in 1980, the U.S. Environmental Protection Agency (EPA) filed suit against Reilly for the groundwater contamination, and the city and MPCA joined the litigation. In 1983, the MPCA began a $1.9 million federal Superfund study of the problem. The studies, though time-consuming, are essential to be sure that clean-up measures are effective.

While Superfund work continued, negotiations with Reilly began in early 1984, and in _____1985, all of the parties reached a tentative agreement on the terms of a settlement. Reilly agreed to several actions, including the following:

- Provide carbon filtration in 1985 to purify water from two St. Louis Park wells to restore lost capacity to the city's water system;
- Investigate and control the spread of contamination in five ground-water aquifers in the area of the site;
- Investigate and, if necessary, close private and industrial wells that may be pathways for contaminants moving from shallow to deep ground water;
- Investigate near-surface contamination south of the former site and, if necessary, fill areas to minimize infiltration of precipitation.
- Pay $1.68 million to the EPA and $500,000 to the city for past costs and $1 million to the Minnesota Superfund for past costs and oversight expenses;
- Establish a contingency fund for the city with a $600,000 principal payment.

Questions?

Call the Minnesota Pollution Control Agency at (612) 296-7769 for more information.

MINNESOTA POLLUTION CONTROL AGENCY

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Fact Sheet

RESTORING ST. LOUIS PARK WELLS TO SERVICE

What's the problem?

Polynuclear aromatic hydrocarbons (PAH) in coal-tar wastes have entered the Prairie du Chien-Jordan aquifer, an underground water source, from the former Reilly Tar and Chemical Co. site in St. Louis Park. Some PAH are believed to have the potential to cause cancer if they are consumed over a long period of time, and the Minnesota Department of Health has established guidelines for the quantity of PAH in municipal drinking-water supplies.

One of the Hopkins and six of the St. Louis Park municipal wells have been shut down due to the contamination of the aquifer, 500 feet underground. The City of St. Louis Park has connected with the Plymouth water system to supply water to the northwest corner of St. Louis Park, and a new, deeper well was completed in 1983. A summer water conservation program has also helped to ease the shortage.

However, those actions do not replace the volume of water from the six closed wells, and a source of clean water to add to the St. Louis Park supply must be found so that sufficient water is available, particularly in high-use months.

What's been done to find more water?

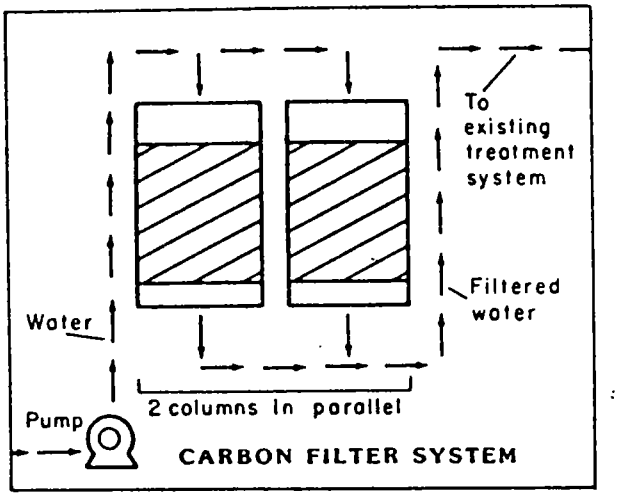
The Minnesota Pollution Control Agency (MPCA) investigated three possibilities, including connection to the Minneapolis water system, drilling more deep wells and treating water from an existing well to remove pollutants. To learn whether water treatment would work, the MPCA's contractor conducted a pilot project to study the effectiveness of various treatment systems.

Filtration with granular activated carbon (GAC) proved to be effective at removing the chemicals throughout the testing period. The Minnesota Department of Health's guidelines for carcinogenic and noncarcinogenic PAH are 28 and 280 nanograms per liter of water. (A nanogram is one-billionth of a gram.) After the water was treated, no carcinogenic PAH were detectable, and the average total of noncarcinogenic PAH was 12 nanograms per liter. Carbon treatment was selected as the best method to assure enough safe water for St. Louis Park as a consequence of the study.

How will the system work?

GAC is manufactured from coal to make a porous carbon product with a very large surface to which the molecules of the contaminants are attracted and cling. The well water will pass slowly through columns containing GAC, and water leaving the system will be clean. Eventually the carbon will become "loaded" with the chemicals and no longer be effective, at which time it must be replaced with new carbon.

The system to be constructed for St. Louis Park will consist of two columns in parallel (water runs through two columns simultaneously). Each column will be 16 feet high and 10 feet in diameter, and each will hold 20 tons of carbon. If experience indicates that the carbon requires frequent replacement under this system, two more columns will be added to the system so that all water will run through two columns before entering the distribution pipes. A building will be constructed to house the system.



CARBON FILTER SYSTEM

Reilly Tar and Chemical Co. will pay for construction of the filtration system by Calgon, Inc. On-going operation and maintenance will be handled by the City of St. Louis Park staff who are responsible for the city water system.

How can we be sure it is working?

Water leaving the system will be tested periodically, frequently at first. Eventually, experience will indicate the safe interval of time before the need for a carbon change, and the testing schedule will be modified. Used carbon will be removed and regenerated out of state for re-use. Only virgin (not regenerated) carbon will be used in this system.

Carbon filtration has been used several times by the MPCA to assure safe water in Minnesota communities where organic chemicals found their way into water-supply aquifers. Used in a municipal system, where it can be monitored and bacterial growth on the filters prevented, it is one of the best ways to remove contaminants.

Where will it be built?

The plan is to build the system for use on St. Louis Park Wells No. 10 and 15, which are located north of Minnetonka Boulevard between Idaho and New Jersey. It is expected that with those wells in use, St. Louis Park Wells No. 7 and 9 can be returned to service. Wells 7 and 9 are located south of Cedar Lake Road between Louisiana and Nevada Avenues. Although showing only slight contamination when last in service, they were shut down because it was believed that with 10 and 15 not pumping, they would draw the contamination north.

More questions?

For more information, call the MPCA at (612) 296-7769 or the City of St. Louis Park Department of Public Works at _____.

MINNESOTA POLLUTION CONTROL AGENCY

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Fact Sheet

CLEANING UP GROUND WATER UNDER ST. LOUIS PARK

Like much of Minnesota, the St. Louis Park area is underlain by many layers of gravel, sand, clay or rock. Some of the beds yield enough water to wells drilled to their level to be considered to be water sources or aquifers. Other rock or clay beds are called "aquitards" or "confining beds" because water cannot pass through them easily. They tend to hold water in the aquifer below them under pressure and by their nature prevent infiltration between aquifers.

Aquifers in the area of the former Reilly Tar and Chemical Co. site near State Highway 7 and Louisiana Avenue have become contaminated with coal-tar compounds from wastewater discharge, leaks and spills occurring while Reilly treated wood at the site. A potential settlement between Reilly and the many parties with an interest in the problem has been reached. This fact sheet outlines the activities Reilly will undertake to remove contaminants from ground water near the site and to prevent further degradation of the aquifers.

Three types of wells will be referred to in this fact sheet. The first is a monitoring well, a well which is used only to measure the water level underground or to get water samples for chemical analysis.

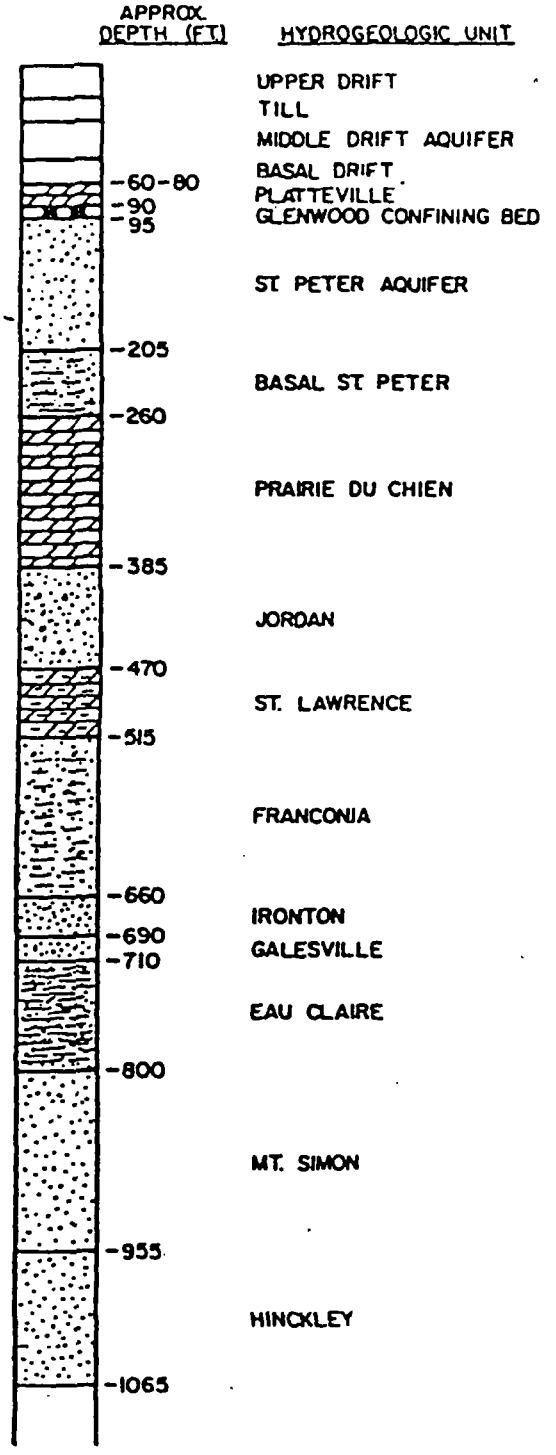
Another well to be used by Reilly is called a source control well. That is a well which is placed in the area of high contamination and is pumped constantly to remove contaminated water. It also creates a depression in the level of water in the aquifer around the well, reducing any flow away from the area and controlling the "source" of contaminated water.

The third well to be discussed is termed a gradient control well. "Gradient" in this sense refers to the movement of ground water, which is influenced by both the differences in water levels in the aquifer and by stresses from significant pumping wells. A gradient control well is designed and pumped in order to modify the movement of ground water so that contamination cannot spread. Because its purpose is to alter ground-water flow patterns rather than to directly remove contaminants, a gradient control well may be located where contaminant levels are very low.

The column on the following page is known as a "stratigraphic column," and it illustrates the geology underlying the St. Louis Park area. Five aquifers are indicated, the Drift-Platteville, the St. Peter, the Prairie du Chien-Jordan, the Ironton-Galesville and the Mt. Simon-Hinckley.

STRATIGRAPHIC COLUMN

ST. LOUIS PARK



Drift-Platteville Aquifer

The uppermost aquifer is the Drift, and directly under it is the Platteville. As water moves with relative ease between them, they are considered in this fact sheet to be a single aquifer. The Drift-Platteville aquifer is open to contamination from the surface and is contaminated several thousand feet east of the site. A St. Louis Park municipal well one-half mile north of the site is drilled to the St. Peter, but it is also open to the Platteville. It has not shown any contamination.

Source Control: Under the terms of the settlement, Reilly will install two source control wells at the eastern edge of the swamp south of the site. Each well will be pumped at 25 gallons per minute (gpm) to the sanitary sewer for proper treatment.

Gradient Control: Reilly will install a gradient control well west of a buried bedrock valley (between Highway 7 and the railroad at Dakota Avenue) to pump 25 gpm to the sanitary sewer. The company will also investigate the need for gradient control wells east of the site itself and install any additional wells that prove necessary.

Monitoring: Between 20 and 30 wells are to be routinely monitored to track the contamination and assess how well the remedial measures are working.

St. Peter Aquifer

Moving down the stratigraphic column, we next find the Glenwood confining bed, a layer of shale that serves as an aquitard Beneath it lies the St. Peter aquifer, which is known to be contaminated near the former site. One St. Louis Park well

(Well #3, between Idaho and New Jersey, south of 29th) draws water from this aquifer, but the general movement in the aquifer is to the southeast, and the well has not shown contamination.

An investigation is planned to determine what remedial measures, if any, must be taken.

Prairie du Chien-Jordan Aquifer

The next aquifer, the Prairie du Chien-Jordan, is separated from the St. Peter by the shale and siltstone of the Basal St. Peter confining bed. Actually two aquifers with no aquitard between them, the Prairie du Chien-Jordan is the aquifer used extensively by Metropolitan-Area suburban communities and industries for manufacturing and drinking water. It was the ground water source from which shut-down St. Louis Park and Hopkins wells drew their water.

The Prairie du Chien-Jordan has become contaminated, apparently by tar-like materials that were found deep in a well on the Reilly site and by water flowing from upper, contaminated aquifers down the shafts of old, poorly-constructed wells.

Several measures are planned in order to remove contaminants and protect now-clean areas of this very important aquifer.

Drinking water: St. Louis Park Wells #10 and #15, now shut down due to contamination, are to receive carbon filtration, which removes the contaminants so that they can be returned to use. Their pumping will become a part of a gradient control system.

Source control: The on-site well that held the tar-like material is to be used to pump out heavily-contaminated water into the sanitary sewer for treatment.

Gradient control: St. Louis Park Well #4 (now shut down) is to be pumped to a yet-undetermined location.

Monitoring: One to three new monitoring wells are to be installed and periodically tested

Ironton-Galesville Aquifer

Because of its depth and low yield, the Ironton-Galesville is not used as a water source in the St. Louis Park area. It is known to be contaminated, but the contaminated area is believed to be relatively small.

Source control: A well in this aquifer on the former Reilly site will be pumped to the sanitary sewer for treatment.

Monitoring: Monitoring will be performed on the source control well and the old Milwaukee Railroad well on the south side of the railroad tracks west of Wooddale Avenue.

Mt. Simon-Hinckley Aquifer

The Mt. Simon-Hinckley is increasingly used as a water-supply source in the St. Louis Park area, including four municipal wells in the city. The only possible source of significant contamination is the on-site well that was found plugged with tar, and no contamination of the aquifer has been documented.

Monitoring: Reilly is required to monitor the St. Louis Park municipal wells drawing from the Mt. Simon-Hinckley. A contingency fund is being established by the company for the city's use in case a municipal well must receive treatment for contamination in the future.

Other Actions

To prevent vertical migration of contaminants via improperly constructed wells, Reilly is to investigate private and industrial wells that may be open to more than one aquifer. If they are found to be contributing to the spread of the contamination, Reilly will close those wells. Where necessary, new water supplies will be provided for the users of the wells.

To learn more about near-surface contamination, Reilly will perform soil borings along the route wastewater followed toward Minnehaha Creek before 1930. In addition, Reilly will fill the bog area and plant suitable vegetation.

More Questions?

For more information, call the Minnesota Pollution Control Agency at (612) 296-7769.

MPCA

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